RECEIVED
CENTRAL FAX CENTER
MAR 2 8 2006

600 Hidden Ridge Drive
Irving, Texas 75038
MailCode HQE03H14
Phone: 972/718-4800
Fax: 972/718-3946
E mail:
christian.andersen@verizon.com

Intellectual Property Law Group

Verizon Corporate Services Group Inc

To: U.S. Patent and Trademark Office –
MAIL STOP: Appeal Brief - Patents
Examiner: D. LEVITAN
Group Art Unit: 2662

From: Christian R. Andersen
Specialist – Intellectual Property

Fax: 571-273-8300

Pages with Cover: 39

FORMAL SUBMISSION OF:

1) **Appeal Brief.**

Title:	**TERMINAL EXTENSION REPEATER**
Serial No.	**09/630,413**
Filing Date:	**August 1, 2000**
First Named Inventor:	**William N. Demakakos**
Atty. No.	**00-VE12.24**
Customer Number:	**32127**

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the above-referenced documents are facsimile transmitted to the Patent and Trademark Office on the date shown below:

Christian R. Andersen

Date of Transmission: March 28, 2006

#1742 v1

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being transmitted by facsimile to the United States Patent Office at 571-273-8300.

Dated: March 28, 2006 Signature: Christian R. Andersen (Christian R. Andersen)

Docket No.: 00-VE12.24
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
William N. Demakakos et al.

Application No.: 09/630,413 Art Unit: 2662

Filed: August 1, 2000 Examiner: D. Levitan

For: TERMINAL EXTENSION REPEATER

APPEAL BRIEF

Mail Stop Appeal Brief- Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This appeal is from the decision of the Primary Examiner dated October 28, 2005 ("Final Office Action"), finally rejecting claims 1-19, 21-33, 35-40, 42-44, and 46, which are reproduced as an Appendix to this brief. The Notice of Appeal was filed on January 30, 2006. This application was filed on August 1, 2000.

Application No.: 09/630,413 Docket No.: 00-VE12.24

TABLE OF CONTENTS

Application No.: 09/630,413 Docket No.: 00-VE12.24

I. REAL PARTY IN INTEREST

The real party in interest is Verizon Services Corp., assignee, a corporation organized and existing under the laws of the state of Delaware, and having a place of business at 1310 N. Court House Road, Arlington, Virginia, 22201.

II. RELATED APPEALS AND INTERFERENCES

Applicants (hereinafter "Appellants") are not aware of any related appeals or interferences that would affect the Board's decision on the current appeal.

III. STATUS OF CLAIMS

Claims 1-19, 21-33, 35-40, 42-44, and 46 are pending. Claims 1, 22, 36, and 43 are independent claims. All pending claims, reproduced in the Claims Appendix attached hereto, were rejected in the Final Office Action and are the subject of this appeal.

In the Final Office Action, claims 36-40 and 42-46 were rejected under 35 U.S.C. § 112 as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants (hereinafter, "Appellants") regard as the invention. Appellants believe that the claim amendments made in their December 27, 2005 response to the Final Office Action overcome the pending Section 112 rejections. These claim amendments, as stated in Section IV below, have been entered for purposes of appeal (see January 4, 2006 Advisory Action).

Further in the Final Office Action, claims 1-3, 7-9, 11-14, and 18 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. 5,343,461 ("Barton") in view of U.S. 5,060,226 ("Gewin). Claims 15 and 16 were rejected under Section 103 as allegedly unpatentable over Barton and Gewin in view of allegedly admitted prior art. Claims 4, 22-26, 28, 29, 32, and 36 were rejected under Section 103 as allegedly unpatentable over Barton in view of Gewin and U.S. 5,224,149 ("Garcia"). Claims 30, 31, and 37-39 were rejected under Section 103 as allegedly unpatentable over Barton, Gewin and Garcia in view of allegedly admitted prior art and further in view of U.S. 5,521,977 ("Bergstrom"). Claims 5 and 6 were rejected under Section 103 as allegedly unpatentable over Barton, Gewin and Garcia in further view of Bergstrom. Claims 10 and 27 were rejected under Section 103 as allegedly unpatentable over Barton, Gewin and Garcia in further view of U.S. 4,107,469 ("Jenkins"). Claim 43 was rejected under Section 103 as allegedly unpatentable over Barton in view of allegedly admitted prior art and further in view of Gewin and Bergstrom. Claims 19, 21, 33, 35, 40, 42, 44, and 46 were rejected under Section 103 as allegedly unpatentable over Barton, Gewin and Garcia in further view of allegedly admitted prior art.

IV. STATUS OF AMENDMENTS

In their Amendment After Final Action dated December 27, 2005, filed in response to the Final Office Action, Appellants amended claims 36 and 43 for the purpose of overcoming the rejection of those claims and claims 37-40 and 43-46 depending therefrom under 35 U.S.C. § 112. The Advisory Action dated January 4, 2006 stated that the amendments would be entered for purposes of appeal.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present application includes claims directed to a repeater for interfacing between a digital service network and a local network span. The following is a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, as required by 37 C.F.R. § 41.37(c)(1)(v). The following explanation is not intended to be used to construe the claims, which are believed to speak for themselves, nor do Appellants intend the following explanation to modify or add any claim elements, or to constitute a disclaimer of any equivalents to which the claims would otherwise be entitled. References to the Specification are intended to be exemplary and not limiting.

A. Claim 1

Independent claim 1 recites a repeater for interfacing between a digital service network and a local network span. In some embodiments, the repeater comprises a circuit card conforming to the "200-type" industry standard for Network Communication Terminal Equipment. (Specification, page 9, lines 11-19.) The repeater comprises a first input port for connection to a first digital carrier link for coupling to a digital network. (Specification, page 11, lines 9-10; page 12, lines 6-16; Fig. 3.) For example, Appellants' Figure 3 shows repeater 110 configured to receive signals from a DSX-1 network at a transformer 308 through one of jacks 250-254. (Specification, page 12, lines 6-9; page 13, lines 11-12.) The repeater further comprises a first output port for connection to a second digital carrier link for coupling to digital terminal equipment. (Specification, page 11, lines 9-10; page 12, line 17 – page 13, line 3; Fig. 3.) For example, Appellants' Figure 3 shows repeater 110 configured to deliver signals to a DSX-1 network at a transformer 338 through one of jacks 260-254. (Specification, page 12, lines 17-19; page 13, lines 11-12.) The repeater of claim 1 further comprises a first signal transmission path between the first input and output ports, shown, for example, in Figure 3. (Specification, page 12, lines 6-16.)

The repeater of claim 1 further comprises a second input port for connection to the second digital carrier link for coupling to digital terminal equipment, and a second output port for connection to the first digital carrier link for coupling to a digital network. (E.g., Figs. 2 and 3, jacks 252 and 262.) Also included is a second signal transmission path between the second input and output ports as shown, for example, in Figure 3. (Specification, page 12, line 17 – page 13.)

The repeater of claim 1 further comprises a first selectably-activated loopback circuit which, when activated, provides a third signal transmission path between the first input port and the second output port. With reference to Figure 3, for example, in one embodiment, if the repeater 110 is looped-back towards a DSX-1 network, then a regenerated signal from a regenerator 316 travels through the closed relay path 350, to a LBO circuit 336. From the LBO circuit 336, the signal is output to a transformer 338 connected to the DSX-1 network. (Specification, page 12, lines 13-16.) Further, a second selectably-activated loopback circuit which, when activated, provides a fourth signal transmission path between the second input port and the first output port. Again with reference to Figure 3, for example, in one embodiment, if the repeater 110 is looped-back towards a local T1 span, then a regenerated signal from a regenerator 332 travels through the closed relay path 348, to a LBO circuit 320. From the LBO circuit 320, the signal is output to a transformer 322 connected to the local T1 span. (Specification, page 12, line 23 – page 13, line 3.)

Further, in at least one embodiment, a push button 346 locally controls the loopback state of the repeater 110 and is connected with the controller 340. (Specification, page 13, lines 4-5.) Claim 1 further recites a controller coupled with the first and second selectably-activated loopback circuits configured to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously. Still with reference to Figure 3, in at least one embodiment, inputs to the controller 340 from the push button 346, framing detectors 330 and 314, and loopback code detectors 328 and 312 determine which of the relay paths 318, 334, 348, and 350 are open and closed. (Specification, page 13, lines 6-8.)

B. Claim 22

Independent claim 22 recites a terminal extension repeater for interfacing between a digital service network and a local network span. In some embodiments, the repeater comprises a circuit card conforming to the "200-type" industry standard for Network Communication Terminal Equipment. (Specification, page 9, lines 11-19.) A high level view of the claimed terminal extension repeater according to an embodiment can be seen in Figure 4, which illustrates a repeater 408 located between a central office 400 and a customer premises equipment 414. (Specification, page 19, lines 20-22; see also Fig. 1.)

Further, the terminal extension repeater of claim 22 comprises a first input port for

connection with a terminal side of the digital service network, the first input port receiving a first digital signal. For example, Appellants' Figure 3 shows repeater 110 configured to receive signals from a local T1 span at a transformer 326. (Specification, page 12, lines 17-19; page 13, lines 11-12.; see also Figs. 1 and 4.) Also, the terminal extension repeater of claim 22 comprises a first output port for connection with a network side of the local network span connected with customer premises equipment, the first output port providing a first regenerated signal to the local network span. For example, Appellants' Figure 3 shows repeater 110 configured to deliver signals to a DSX-1 network at a transformer 338 through one of jacks 260-254. (Specification, page 12, lines 17-19; page 13, lines 11-12.)

Claim 22 further recites that the terminal extension repeater comprises a second input port for connection with the network side of the local network span connected with customer premises equipment, the second input port receiving a second digital signal. (Specification, page 11, lines 9-10; page 12, lines 6-16; Fig. 3.) For example, Appellants' Figure 3 shows repeater 110 configured to receive signals from a DSX-1 network at a transformer 308 through one of jacks 250-254. (Specification, page 12, lines 6-9; page 13, lines 11-12.) The terminal extension repeater of claim 22 further comprises a second output port for connection with the terminal side of the digital service network, the second output port providing a second regenerated signal to the digital service network. (Specification, page 11, lines 9-10; page 12, line 17 – page 13, line 3; Fig. 3.) For example, Appellants' Figure 3 shows repeater 110 configured to deliver signals to a DSX-1 network at a transformer 338 through one of jacks 260-254. (Specification, page 12, lines 17-19; page 13, lines 11-12.)

The terminal extension repeater of claim 22 further comprises a first signal regenerator coupled between the first input and output for generating the first regenerated signal based on the first digital signal. (Specification, page 12, lines 20-21; Figure 3, signal regenerator 332.) Further, a second signal regenerator is coupled between the second input and output for generating the second regenerated signal based on the second digital signal. (Specification, page 12, line 11; Figure 3, signal regenerator 316.)

Further, the terminal extension repeater of claim 22 comprises a first selectably-activated loopback circuit which, when activated, loops the first regenerated signal to the second output port.

With reference to Figure 3, for example, in one embodiment, if the repeater 110 is looped-back towards a local T1 span, then a regenerated signal from a regenerator 332 travels through the closed relay path 348, to a LBO circuit 320. From the LBO circuit 320, the signal is output to a transformer 322 connected to the local T1 span. (Specification, page 12, line 23 – page 13, line 3.) Also, a second selectably-activated loopback circuit which, when activated, loops the second regenerated signal to the first output port. With reference to Figure 3, for example, in one embodiment, if the repeater 110 is looped-back towards a DSX-1 network, then a regenerated signal from a regenerator 316 travels through the closed relay path 350, to a LBO circuit 336. From the LBO circuit 336, the signal is output to a transformer 338 connected to the DSX-1 network. (Specification, page 12, lines 13-16.)

Further, in at least one embodiment, a push button 346 locally controls the loopback state of the repeater 110 and is connected with the controller 340. (Specification, page 13, lines 4-5.) Claim 22 further recites a controller coupled with the first and second selectably-activated loopback circuits configured to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously. Still with reference to Figure 3, in at least one embodiment, inputs to the controller 340 from the push button 346, framing detectors 330 and 314, and loopback code detectors 328 and 312 determine which of the relay paths 318, 334, 348, and 350 are open and closed. (Specification, page 13, lines 6-8.)

C. **Claim 36**

Independent claim 36 recites a repeater for interfacing between a digital service network and a local network span. In some embodiments, the repeater comprises a circuit card conforming to the "200-type" industry standard for Network Communication Terminal Equipment. (Specification, page 9, lines 11-19.) A high level view of the claimed repeater according to an embodiment can be seen in Figure 4, which illustrates a repeater 408 located between a central office 400 and a customer premises equipment 414. (Specification, page 19, lines 20-22; see also Fig. 1.)

The repeater of claim 36 comprises a first input port for connection to a first digital carrier link to a digital network. (Specification, page 11, lines 9-10; page 12, lines 6-16; Fig. 3.) For example, Appellants' Figure 3 shows repeater 110 configured to receive signals from a DSX-1 network at a transformer 308 through one of jacks 250-254. (Specification, page 12, lines 6-9; page

13, lines 11-12.) By way of further example, Figure 4 illustrates local loop 402 upstream of repeater 408. (See also Specification, page 20, lines 1-6.) Further, the repeater of claim 36 comprises a first output port for connection to a second digital carrier link to digital terminal equipment. Again with reference to Figure 3, in at least one embodiment, signals received at a transformer 308 pass through repeater 110 for delivery to a local T1 span at a transformer 322. (Specification, page 12, lines 7-9.) By way of further example, Figure 4 illustrates network interface unit 412 and local span (also labeled 412) connected to repeater 408. (See also Specification, page 20, lines 15-22.) Further, the repeater of claim 36 comprises a first signal transmission path between the first input and output ports comprising a first signal regenerator, an exemplary transmission path being shown in Figure 3 and including a regenerator 316. (Specification, page 12, lines 6-16.)

The repeater of claim 36 also comprises a second input port for connection to the second digital carrier link to digital terminal equipment.[1] With reference to Figure 3, in one embodiment signals are received from a local T1 span at a transformer 326 and pass through repeater 110 for delivery to a DSX-1 network at a transformer 338. (Specification, page 12, lines 17-19.) Further included in the repeater of claim 36 is a second output port for connection to the first digital carrier link to a digital network. For example, Appellants' Figure 3 shows repeater 110 configured to deliver signals to a DSX-1 network at a transformer 338 through one of jacks 260-254. (Specification, page 12, lines 17-19; page 13, lines 11-12.) The repeater of claim 36 also comprises a second signal transmission path between the second input and output ports comprising a second signal regenerator, an exemplary transmission path being shown in Figure 3 and including a regenerator 332. (Specification, page 12, lines 17-23.)

Further, the repeater of claim 36 comprises a first monitor jack for non-intrusively providing a monitor connection with the first signal transmission path and a second monitor jack for non-intrusively providing a monitor connection with the second signal transmission path. For example, in one embodiment, as shown in Figure 3, non-intrusive monitor jacks 254 and 264 offer a high impedance tap into signals. Isolation resisters of approximately 300 Ohms may be used at these

[1] Claim 36 as presently pending also recites a second input port for connection to the first digital carrier link to a digital network. However, inasmuch as this "second input port" is the same as the "first input port" recited in claim 36, Appellants intend to seek to remove this limitation from the claim following this Appeal.

jacks to support the performance of non-intrusive monitoring of signals. (Specification, page 13, lines 21-23.)

The repeater of claim 36 further comprises a controller coupled with first and second selectably-activated loopback circuits configured to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously. With reference to Figure 3, for example, in one embodiment, if the repeater 110 is looped-back towards a local T1 span, then a regenerated signal from a regenerator 332 travels through the closed relay path 348, to an LBO circuit 320. From the LBO circuit 320, the signal is output to a transformer 322 connected to the local T1 span. (Specification, page 12, line 23 – page 13, line 3.) Further with reference to Figure 3, for example, in one embodiment, if the repeater 110 is looped-back towards a DSX-1 network, then a regenerated signal from a regenerator 316 travels through the closed relay path 350, to an LBO circuit 336. From the LBO circuit 336, the signal is output to a transformer 338 connected to the DSX-1 network. (Specification, page 12, lines 13-16.) Further, in at least one embodiment, a push button 346 locally controls the loopback state of the repeater 110 and is connected with the controller 340. (Specification, page 13, lines 4-5.) Still with reference to Figure 3, in at least one embodiment, inputs to the controller 340 from the push button 346, framing detectors 330 and 314, and loopback code detectors 328 and 312 determine which of the relay paths 318, 334, 348, and 350 are open and closed. (Specification, page 13, lines 6-8.)

D. Claim 43

Independent claim 43 recites a repeater for interfacing between a digital service network and a local network span. In some embodiments, the repeater comprises a circuit card conforming to the "200-type" industry standard for Network Communication Terminal Equipment. (Specification, page 9, lines 11-19.) A high level view of the claimed repeater according to an embodiment can be seen in Figure 4, which illustrates a repeater 408 located between a central office 400 and a customer premises equipment 414. (Specification, page 19, lines 20-22; see also Fig. 1.)

The repeater of claim 43 comprises a first input port for connection to a first digital carrier link to a digital network. (Specification, page 11, lines 9-10; page 12, lines 6-16; Fig. 3.) For example, Appellants' Figure 3 shows repeater 110 configured to receive signals from a DSX-1 network at a transformer 308 through one of jacks 250-254. (Specification, page 12, lines 6-9; page

13, lines 11-12.) By way of further example, Figure 4 illustrates local loop 402 upstream of repeater 408. (See also Specification, page 20, lines 1-6.) Further, the repeater of claim 43 comprises a first output port for connection to a second digital carrier link to digital terminal equipment. Again with reference to Figure 3, in at least one embodiment, signals received at a transformer 308 pass through repeater 110 for delivery to a local T1 span at a transformer 322. (Specification, page 12, lines 7-9.) By way of further example, Figure 4 illustrates network interface unit 412 and local span (also labeled 412) connected to repeater 408. (See also Specification, page 20, lines 15-22.) Further, the repeater of claim 43 comprises a first signal transmission path between the first input and output ports comprising a first signal regenerator, an exemplary transmission path being shown in Figure 3 and including a regenerator 316. (Specification, page 12, lines 6-16.)

The repeater of claim 43 also comprises a second input port for connection to the second digital carrier link to digital terminal equipment.[2] With reference to Figure 3, in one embodiment signals are received from a local T1 span at a transformer 326 and pass through repeater 110 for delivery to a DSX-1 network at a transformer 338. (Specification, page 12, lines 17-19.) Further included in the repeater of claim 43 is a second output port for connection to the first digital carrier link to a digital network. For example, Appellants' Figure 3 shows repeater 110 configured to deliver signals to a DSX-1 network at a transformer 338 through one of jacks 260-254. (Specification, page 12, lines 17-19; page 13, lines 11-12.) The repeater of claim 43 also comprises a second signal transmission path between the second input and output ports comprising a second signal regenerator, an exemplary transmission path being shown in Figure 3 and including a regenerator 332. (Specification, page 12, lines 17-23.)

Further, the repeater of claim 43 comprises a first monitor jack for non-intrusively providing a monitor connection with the first signal transmission path and a second monitor jack for non-intrusively providing a monitor connection with the second signal transmission path. For example, in one embodiment, as shown in Figure 3, non-intrusive monitor jacks 254 and 264 offer a high impedance tap into signals. Isolation resisters of approximately 300 Ohms may be used at these

[2] Claim 36 as presently pending also recites a second input port for connection to the first digital carrier link to a digital network. However, inasmuch as this "second input port" is the same as the "first input port" recited in claim 36, Appellants intend to seek to remove this limitation from the claim following this Appeal.

jacks to support the performance of non-intrusive monitoring of signals. (Specification, page 13, lines 21-23.)

The repeater of claim 43 further comprises a first frame format detector configured to determine a first format of a first signal on the first signal transmission path and a second frame format detector configured to determine a second format of a second signal on the second transmission path, for example, DS-1 frame format detectors 312 and 330 shown in Figure 3. Such detectors are known in the art but have not been used on extension repeaters. These detectors determine, based on the received data's characteristics, the DS-1 framing type being used by the sending network. (Specification, page 14, lines 11-14.) The repeater of claim 43 also comprises a first visual indicator which provides one of a first plurality of indications based on the first format and a second visual indicator which provides one of a second plurality of indications based on the second format. Again with reference to the exemplary embodiment illustrated in Figure 3, each frame detector forwards the framing determination to controller 340 which illuminates an appropriate LED or other visual indicator. In this embodiment, each side of the repeater has a framing indicator 342a which allows a technician to quickly determine if the local T1 span and the DSX-1 network agree on the framing type being used. (Specification, page 14, lines 16-19.)

The repeater of claim 43 further comprises a controller coupled with first and second selectably-activated loopback circuits configured to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously. With reference to Figure 3, for example, in one embodiment, if the repeater 110 is looped-back towards a local T1 span, then a regenerated signal from a regenerator 332 travels through the closed relay path 348, to an LBO circuit 320. From the LBO circuit 320, the signal is output to a transformer 322 connected to the local T1 span. (Specification, page 12, line 23 – page 13, line 3.) Further with reference to Figure 3, for example, in one embodiment, if the repeater 110 is looped-back towards a DSX-1 network, then a regenerated signal from a regenerator 316 travels through the closed relay path 350, to an LBO circuit 336. From the LBO circuit 336, the signal is output to a transformer 338 connected to the DSX-1 network. (Specification, page 12, lines 13-16.) Further, in at least one embodiment, a push button 346 locally controls the loopback state of the repeater 110 and is connected with the controller 340. (Specification, page 13, lines 4-5.) Still with reference to Figure 3, in at least one

embodiment, inputs to the controller 340 from the push button 346, framing detectors 330 and 314, and loopback code detectors 328 and 312 determine which of the relay paths 318, 334, 348, and 350 are open and closed. (Specification, page 13, lines 6-8.)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. That claims 1-3, 7-9, 11-14, and 18 are unpatentable under Section 103 over Barton in view of Gewin.

2. That claims 15 and 16 are unpatentable under Section 103 over Barton and Gewin in view of allegedly admitted prior art.

3. That claims 4, 22-26, 28, 29, 32, and 36 are unpatentable under Section 103 over Barton in view of Gewin and Garcia.

4. That claims 30, 31, and 37-39 are unpatentable under Section 103 over Barton, Gewin and Garcia in view of allegedly admitted prior art and further in view of Bergstrom.

5. That claims 5 and 6 are unpatentable under Section 103 over Barton, Gewin and Garcia in further view of Bergstrom.

6. That claims 10 and 27 are unpatentable under Section 103 over Barton, Gewin and Garcia in further view of Jenkins.

7. That claim 43 is unpatentable under Section 103 over Barton in view of allegedly admitted prior art and further in view of Gewin and Bergstrom.

8. That claims 19, 21, 33, 35, 40, 42, 44, and 46 are unpatentable under Section 103 over Barton, Gewin and Garcia in further view of allegedly admitted prior art.

VII. ARGUMENT

All pending claims stand rejected as allegedly obvious under 35 U.S.C § 103(a). These rejections should be reversed at least because the Examiner has not met his burden of stating a *prima facie* case of obviousness with respect to Appellants' claims. It is well settled that

> [t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

MPEP § 2143. Further, "[t]he teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Appellant's disclosure." Id. (citing In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Here, the Examiner has failed to show that the cited references teach or suggest all the claim limitations, much less that one of ordinary skill in the art would have been motivated to combine the cited references.

A. All of Independent Claims 1, 22, 36, And 43, And Therefore All Claims, Are Patentable Over Combinations Including Barton and Gewin.

Each of independent claims 1, 22, 36, and 43 stands rejected over some combination of prior art that includes Barton and Gewin. Regarding each independent claim, the Examiner has acknowledged that Barton, the primary cited reference, fails to disclose "a second selectably-activated loopback circuit . . . and a controller . . . to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously." (See, e.g., Final Office Action, page 3.) The Examiner contended that Gewin makes up for the acknowledged deficiencies of Barton. However, (1) Gewin does not teach or suggest the afore-quoted claim limitation, (2) nor does Barton or Gewin provide support for any motivation to combine the references. Accordingly, for any of these independent reasons, the Examiner has failed to state a prima facie case of obviousness and Appellants' independent claims are allowable over the prior art of record.

1. **The Combination Of Barton And Gewin Fails To Teach Or Suggest "a second selectably-activated loopback circuit . . . and a controller . . . to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously."**

Gewin clearly fails to teach two loopback circuits that are "selectably-activated individually and simultaneously," as recited in Appellants' independent claims. Gewin teaches "a master test unit capable of sending and receiving test data [that is] configured at a selected point within a network in combination with a plurality of remotely addressable field loopback units, also located at selected points within the network." (Col. 2, lines 41-46.) Thus,

> [w]hen a field unit is activated, it assumes the loopback mode wherein all data received is echoed back to the transmitting master unit. This loopback occurs in parallel on both the near and far sides of a given loopback unit; thus it is possible to simultaneously test the line on both sides of a given loopback unit, provided there is present an additional master unit located at the far side of the given loopback unit.

(Col. 3, lines 8-16). In short, Gewin's "loopback mode" requires that both the near and far side loopback circuits are activated together rather than being selectably activated individually and simultaneously. (Col. 6, lines 54-63.) The fact that Gewin tests a line on both sides of a loopback unit in no way teaches or suggests "a controller . . . to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously" as is required by Appellants' claims.

Moreover, Gewin simply does not disclose any structure that teaches or suggests "selectively activate[ing] . . . selectably-activated loopback circuits. As explained in Appellants' specification:

> "Both local and remote control of the loopback circuits are contemplated within the scope of the present invention. Local control is provided through a push button switch 346, or other multiposition switch, which signals the controller 340 to loop-up or loop-down the appropriate loopback circuitry. In at least one embodiment, a technician at the repeater pushes the button once to loop towards the DSX-1 network; a second push of the button loops towards the local T1 span. In this configuration, loopbacks in both directions are simultaneously available to enable testing of network segments from the point of demarcation or CPE as well as from the DSX-1 interface or even the central office (see Fig. 1). A third push of the button loops down both circuits". (Page 17, lines 6-14; Fig. 3.)

Gewin, in contrast, discloses a parallel loopback that plainly occurs automatically "[w]hen a field unit is activated." (See col. 3, lines 8-16.) If anything, Gewin teaches that "selectably-activated

loopback circuits" are not desirable or necessary because Gewin teaches always using a "parallel loopback," and therefore teaches against the presently claimed invention.

In the Final Office Action, the Examiner claimed to be relying on Barton's alleged teaching "of a controller to activate the first selectably-activated loopback circuit individually." (Final Office Action, page 13.) However, the cited portion of Barton teaches no more than a code detector for detecting "a loop-up signal or a loop-down signal" and opening or closing a circuit accordingly (col. 18, lines 10-11.) In other words, Barton simply teaches a mechanism for starting and stopping a loopback test. (See col. 17, lines 8-25.) This teaching notwithstanding, nothing in Barton teaches or suggests that a loopback circuit is individually and simultaneously selectively activated, as is required by Appellants' claims. Moreover, the mere fact that a loopback test can be stopped and started does not, by itself, teach or suggest selectively individually and simultaneously activating first and second loopback circuits. Thus, Barton does not teach or suggest the aforementioned claim limitation any more than does Gewin.

For at least the foregoing reasons, all pending claims are in condition for allowance.

2. Motivation To Combine Barton And Gewin Is Lacking.

The Examiner asserted, without any citation to the prior art of record, that it would have been obvious to combine Barton and Gewin "to improve the system loopback capabilities for near and far sides." (Final Office Action, page 4.) Not only does the cited prior art provide no support for this proposition, but the Examiner provided no explanation as to why the alleged need "to improve the system loopback capabilities for near and far sides" would have suggested to one of ordinary skill to create the recited "controller . . . to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously." Indeed, inasmuch as Gewin teaches a parallel loopback, i.e., loopback on both sides of a test unit, there is no suggestion that Gewin's "system loopback capabilities" need improvement. As noted above, if Gewin contains any relevant teaching it is against the recited combination insofar as Gewin teaches that his parallel loopback system is desirable and advantageous.

Moreover, the alleged need "to improve the system loopback capabilities for near and far sides," even if taught by Gewin or some other reference, would not have been sufficient motivation for one of ordinary skill in the art to have created "a controller . . . to selectively activate the first

and second selectably-activated loopback circuits individually and simultaneously" as is required by Appellants' claims. From the vaguely alleged need "to improve the system loopback capabilities for near and far sides," there would have been no reason for one of ordinary skill to have created the recited controller, because one of ordinary skill would have had no suggestion for "a controller . . . to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously;" one of ordinary skill would have only known that there was some general need for improving loopback capabilities.

Accordingly, for at least the foregoing additional reasons, all pending claims are in condition for allowance.

B. The Combination Of Barton, Gewin, and Garcia Fails To Teach Or Suggest Certain Limitations Of Claims 4 and 22.

Claims 4 and 22 recite "a first selectably-activated loopback circuit which, when activated, loops the first regenerated signal to the second output port;" and "a second selectably-activated loopback circuit which, when activated, loops the second regenerated signal to the first output port." Admitting that these claim limitations are not disclosed by the combination of Barton and Gewin, the Examiner contended that Garcia compensates for the acknowledged deficiencies of Barton and Gewin. (Final Office Action, page 6.)

The Examiner contended that Garcia, "teaches a second signal regenerator coupled between second input and output (regenerator 64 on Fig. 1 and 2, 4:37-49)." (Final Office Action, page 7.) However, the Final Office Action wholly failed to address, and Garcia does not teach or suggest, a second selectably-activated loopback circuit which, when activated, loops the second regenerated signal to the first output port. Garcia teaches no more than a single loopback line 66 that loops a signal received from the central office 12 back to the central office 12. The loopback path includes regenerators 62 and 64 which operate to regenerate the received signal as it looped from the first input 18 to the second output 26. (See FIGs. 1 and 2; col. 4, lns. 50-54.) Garcia includes no teaching of a second regenerated signal being looped to the first output port 20 of repeater 22.

In the Advisory Action dated January 4, 2006, the Examiner asserted that "Gewin, not Garcia, teaches a second loopback circuit which, when activated loops the second regenerated signal to the first output port." Once again, the Examiner's piecemeal combination of references fails. Apparently the Examiner cited Garcia only for Garcia's disclosure of "regeneration circuitry." (Col.

4, lns. 37-49.) However, claims 4 and 22 do not recite a regenerator or regeneration circuitry. Rather, these claims require "a first selectably-activated loopback circuit which, when activated, loops the first regenerated signal to the second output port;" and "a second selectably-activated loopback circuit which, when activated, loops the second regenerated signal to the first output port," limitations that are not taught or suggested by any of the prior art of record, including Gewin and Garcia.

Further, the Examiner alleged the same motivation for combining Garcia with Barton and Gewin as was stated for the combination of Barton and Gewin, to wit, the alleged need "to improve the system loopback capabilities for near and far sides." Accordingly, Appellants' arguments above regarding the inadequacy of this asserted motivation are fully incorporated herein, and the lack of motivation to combine Barton, Garcia, and Gewin provides a further independent reason supporting reversal of the rejection of claims 4 and 22.

Accordingly, claims 4, 22-33 and 35 are patentable for at least the additional reasons set forth above.

C. The Examiner Has Cited No Prior Art Teaching Or Suggesting The Limitations Of Claims 5 and 6.

Claims 5 and 6 recite visual indicators for the recited first and second selectably-activated loopback circuits. Claims 5 and 6 were rejected over a proposed combination of Barton, Gewin, Garcia, and Bergstrom. The Final Office Action conceded that the recited visual indicators were not taught by Barton, Gewin, or Garcia, but contended that "Bergstrom teaches a visual indicator (LED) that flashes when the system is in timed loopback." (Final Office Action, page 10.) Assuming arguendo that the Examiner has correctly characterized Bergstrom, this alleged teaching nonetheless fails to read on the first, second, and third visual indicators required by claim 5 and the first, second, and third operating states for the multi-state indicator of claim 6. Further, the alleged motivation to modify the combination of Barton, Gewin, and Garcia, with Bergstrom – "to improve the system visual loop back presentation" –does not make sense, because it is not at all clear what "system visual loop back presentation" is. Moreover, the alleged motivation clearly does not provide a reason for one of ordinary skill to have practiced the limitations of claims 5 and 6, and is not supported by any citation to the prior art of record.

Accordingly, claims 5 and 6 are patentable at least for the additional reasons set forth above.

D. The Examiner Has Cited No Prior Art Teaching Or Suggesting The Limitations Of Claims 10 and 27.

Claim 27 recites "a multi-position local switch which, in a first position, simultaneously activates the first and second selectably-activated loopback circuits and, in a second position, de-activates all of the first and second selectably-activated loopback circuits which are activated." Claim 10 contains a similar limitation. Claims 10 and 27 were rejected over a proposed combination of Barton, Gewin, Garcia, and Jenkins. The Final Office Action conceded that the recited multi-position switch was not taught by Barton, Gewin, or Garcia, but contended that "Jenkins teaches using [a] multi-position switch to combine several switch functions in one switch." (Final Office Action, page 10.) Assuming arguendo that the Examiner has correctly characterized Jenkins, this alleged teaching nonetheless fails to read on the multi-position switch required by claims 10 and 27, which do not merely recite a multi-position switch with several switch functions, but require, for example, that the multi position switch "in a first position, simultaneously activates the first and second selectably-activated loopback circuits and, in a second position, de-activates all of the first and second selectably-activated loopback circuits which are activated."

Further, the alleged motivation to modify the combination of Barton, Gewin, and Garcia with Jenkins – "to save the system cost and space" – clearly does not provide a motivation for one of ordinary skill to have practiced the specific multi-position switch of claims 10 and 27 , and is not supported by any citation to the prior art of record. Moreover, the Examiner has provided no explanation of how Jenkins could have been combined with the other cited references, and indeed, Jenkins appears incapable of combination, inasmuch as Jenkins teaches a multiplexer/demultiplexer and not a loopback system.

Accordingly, claims 10 and 27 are patentable at least for the additional reasons set forth above.

E. The Examiner Has Cited No Prior Art Teaching Or Suggesting The Limitations Of Claim 28.

Claim 28 depends from claim 22 and recites "a line build-out circuit which adjustably attenuates the first regenerated signal before the first regenerated signal reaches the first output port; and a pre-equalized circuit which adjustably re-shapes the second regenerated signal before the second regenerated signal reaches the second output port." The Final Office Action rejected claim

28 as unpatentable over the proposed combination of Barton, Gewin, and Garcia, but stated that none of these references "teach a pre-equalized circuit to shape the second regenerated signal before it reaches the second output port." (Final Office Action, page 8.) However, the Examiner provided no prior art reference teaching or suggesting the foregoing limitations. Instead, the Final Office Action only stated that "[i]t would have been obvious . . . to incorporate [a] second pre-equalizer to shape the signal for the second generator into the system of Gewin, Garcia, and Barton, if needed, to correct [the] signal level for the DSX1/T1 loop." (Id.) Thus, the Examiner has found no prior art reference reading on the limitations of claim 28, much less a prior art reference providing a motivation to have combined those limitations with Barton, Gewin, and Garcia.

At least for the foregoing additional reason, claim 28 is separately patentable.

Application No.: 09/630,413 Docket No.: 00-VE12.24

CONCLUSION

In view of the foregoing arguments, Appellants respectfully submit that the pending claims are novel over, and non-obvious in view of, the cited references. The Examiner's rejections of all pending claims are improper, at least because the prior art of record does not teach or suggest each and every element of the claimed invention. In view of the above analysis, a reversal of the rejections of record is respectfully requested of this Honorable Board.

It is believed that any fees associated with the filing of this paper are identified in an accompanying transmittal. However, if any additional fees are required, they may be charged to Deposit Account 07-2347. To the extent necessary, a petition for extension of time under 37 C.F.R. 1.136(a) is hereby made, the fee for which should be charged against the aforementioned account.

Respectfully submitted,

Dated: March 28, 2006 By _____

Joel Wall
Attorney for Applicant
Reg. No.: 25,648

Verizon Corporate Services Group Inc.
c/o Christian Andersen
600 Hidden Ridge Drive,
Mailcode HQE03H14
Irving, TX 75038
(972) 718-4800
CUSTOMER NO.: 32127

VIII. CLAIMS APPENDIX

Pursuant to 37 CFR § 41.37(c)(vii), the following listing provides a copy of the claims involved in the appeal.

1. A repeater for interfacing between a digital service network and a local network span comprising:

a first input port for connection to a first digital carrier link for coupling to a digital network;

a first output port for connection to a second digital carrier link for coupling to digital terminal equipment;

a first signal transmission path between the first input and output ports;

a second input port for connection to the second digital carrier link for coupling to digital terminal equipment;

a second output port for connection to the first digital carrier link fir coupling to a digital network;

a second signal transmission path between the second input and output ports;

a first selectably-activated loopback circuit which, when activated, provides a third signal transmission path between the first input port and the second output port;

a second selectably-activated loopback circuit which, when activated, provides a fourth signal transmission path between the second input port and the first output port; and

a controller coupled with the first and second selectably-activated loopback circuits configured to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously.

2. The repeater of claim 1, wherein

the first signal transmission path further comprises a first signal regenerator; and the second signal transmission path further comprises a second signal regenerator.

3. The repeater of claim 2, further comprising:

a multi-position switch which activates the first signal regenerator when in a first position and de-activates the first signal regenerator when in a second position.

4. The repeater of claim 2, wherein the third transmission path further comprises the first signal regenerator when the first selectably-activated loopback circuit is activated; and

the fourth transmission path further comprises the second signal regenerator when the second selectably-activated loopback circuit is activated.

5. The repeater of claim 1, further comprising:

a first visual indicator which signals when only the first selectably-activated loopback circuit is activated;

a second visual indicator which signals when only the second selectable-activated loopback circuit is activated; and

a third visual indicator which signals when the first and second selectably-activated loopback circuits are both activated.

6. The repeater of claim 1, further comprising:

a multi-state indicator, with a plurality of visually distinct operating states configured to:

operate in a first state when only the first selectably-activated loopback circuit is activated;

operate in a second state when only the second selectably-activated loopback circuit is activated; and

operate in a third state when the first and second selectably-activated loopback circuits are both activated.

7. The repeater of claim 1, wherein the first signal transmission path further comprises:

a line build-out circuit.

8. The repeater of claim 1, wherein the second signal transmission path further comprises:

a pre-equalizing line build-out circuit.

9. The repeater of claim 1, further comprising:

a selectably-enabled power supply which, when enabled, provides power to a second digital carrier link for coupling to digital terminal equipment.

10. The repeater of claim 1, wherein the controller further comprises:

a multi-position local switch wherein the switch:

activates the second selectably-activated loopback circuit when in a first position;

activates both the first and second selectably-activated loopback circuits when in a second position;

de-activates the first and second selectably-activated loopback circuits when in a third position.

11. The repeater of claim 1, wherein the controller further comprises:

a first loopback code detector configured to:

if the first selectably-activated loopback circuit is de-activated, detect a loop-up code received at the first input port and then activate the first selectably-activated loopback circuit; and

detect a loop-down code received at the first input port and then de-activate both the first selectably-activated loopback circuit, if in an active state, and the second selectably-activated loopback circuit, if in an active state; and

a second loopback code detector configured to:

if the second selectably-activated loopback circuit is de-activated, detect a loop-up code received at the second input port and then activate the second selectably-activated loopback circuit; and

detect a loop-down code received at second input and then de-activate both the first selectably-activated loopback circuit, if in an active state, and the second selectably-activated loopback circuit, if in an active state.

12. The repeater of claim 1, further comprising:

a first monitor jack for non-intrusively providing a monitor connection with the first signal transmission path; and

a second monitor jack for non-intrusively providing a monitor connection with the second signal transmission path.

13. The repeater of claim 12, further comprising:

a third jack for providing signal access to the first digital carrier link for coupling to a digital network; and

a fourth jack for providing signal access to the second digital carrier link for coupling to digital terminal equipment.

14. The repeater of claim 13, wherein signal access comprises signal detection and signal injection.

15. The repeater of claim 1, further comprising:

a first frame format detector configured to determine a first format of a first signal on the first signal transmission path;

a second frame format detector configured to determine a second format of a second signal on the second transmission path;

a first visual indicator which provides one of a first plurality of indications based on the first format; and

a second visual indicator which provides one of a second plurality of indicators based on the second format.

16. The repeater of claim 15 wherein the first and second formats of the first and second signals, respectively, are one of unframed, SF/D4, and T1-ESF.

17. The repeater of claim 1, wherein the first input port and the second output port are adapted for connection to a DSX-1 network.

18. The repeater of claim 1, wherein the second input port and the first output port are adapted for connection to a T1 span.

19. The repeater of claim 1, wherein the physical dimensions of the repeater conform to a Network Communication Terminal Equipment (NCTE) Standard 200-type or 400-type circuit card for a standard wall-mountable telecommunications shelf.

21. The repeater of claim 19 wherein the circuit card includes a 56 pin pin-out.

22. A terminal extension repeater for interfacing between a digital service network and a local network span comprising:

a first input port for connection with a terminal side of the digital service network, the first input port receiving a first digital signal;

a first output port for connection with a network side of the local network span connected with customer premises equipment, the first output port providing a first regenerated signal to the local network span;

a second input port for connection with the network side of the local network span connected with customer premises equipment, the second input port receiving a second digital signal;

a second output port for connection with the terminal side of the digital service network, the second output port providing a second regenerated signal to the digital service network;

a first signal regenerator coupled between the first input and output for generating the first regenerated signal based on the first digital signal

a second signal regenerator coupled between the second input and output for generating the second regenerated signal based on the second digital signal;

a first selectably-activated loopback circuit which, when activated, loops the first regenerated signal to the second output port;

a second selectably-activated loopback circuit which, when activated, loops the second regenerated signal to the first output port; and

a controller coupled with the first and second selectably-activated loopback circuits configured to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously.

23. The terminal extension repeater of claim 22, wherein the controller further comprises:

a first loopback code detector configured to:

remotely activate the second selectably-activated loopback circuit when the second loopback code detector determines the second digital signal includes a loop-up code and the second selectably-activated loopback circuit is in a de-activated state;

remotely de-activate the second selectably-activated loopback circuit when the second loopback code detector determines the second digital signal includes a loop-down code and the second selectably-activated loopback circuit is in an activated state; and

remotely de-activate the first selectably-activated loopback circuit when the second loopback code detector determines the second digital signal includes a loop-down code and the first selectably-activated loopback circuit is in an activated state.

24. The terminal extension repeater of claim 23, wherein the first loopback detector is adapted to detect loop-up and loop-down codes in a plurality of formats.

25. The terminal extension repeater of claim 23, further comprising:

a second loopback code detector configured to:

remotely activate the first selectably-activated loopback circuit when the first loopback code detector determines the first digital signal includes a loop-up code and the first selectably-activated loopback circuit is in a de-activated state;

remotely de-activate the first selectably-activated loopback circuit when the first loopback code detector determines the first digital signal includes loop-down code and the first selectably-activated loopback circuit is in an activated state; and

remotely de-activate the second selectably-activated loopback circuit when the first loopback code detector determines the first digital signal includes a loop-down code and the second selectably-activated loopback circuit is in an activated state.

26. The terminal extension repeater of claim 25, wherein the second loopback detector is adapted to detect loop-up and loop-down codes in a plurality of formats.

27. The terminal extension repeater of claim 22, wherein the controller further comprises:

a multi-position local switch which, in a first position, simultaneously activates the first and second selectably-activated loopback circuits and, in a second position, de-activates all of the first and second selectably-activated loopback circuits which are activated.

28. The terminal extension repeater of claim 22, further comprising:

a line build-out circuit which adjustably attenuates the first regenerated signal before the first regenerated signal reaches the first output port; and

a pre-equalized circuit which adjustably re-shapes the second regenerated signal before the second regenerated signal reaches the second output port.

29. The terminal extension repeater of claim 22, further comprising:

a first monitor jack for non-intrusively providing a monitor connection with the first digital signal; and

a second monitor jack for non-intrusively providing a monitor connection with the second digital signal.

30. The terminal extension repeater of claim 22, further comprising:

a first frame format detector configured to determine a first format of the first signal;

a second frame format detector configured to determine a second format of the second signal;

a first visual indicator which provides one of a first plurality of indicators based on the first format; and

a second visual indicator which provides one of a second plurality of indicators based on the second format.

31. The terminal extension repeater of claim 30 wherein the first and second formats of the first and second signals, respectively, are one of unframed, SF/D4, and T1-ESF.

32. The terminal extension repeater of claim 22, wherein:

the first input port and the second output port are adapted for connection to a DSX-1 network; and

the second input port and the first output port are adapted for connection to a T1 span.

33. The terminal extension repeater of claim 22, wherein the physical dimensions of the terminal extension repeater conform to a Network Communication Terminal Equipment (NCTE) Standard 200-type or 400-type circuit card for a standard wall-mountable telecommunications shelf.

35. The terminal extension repeater of claim 33 wherein the circuit card includes a 56 pin pin-out.

36. A repeater for interfacing between a digital service network and a local network span comprising:

a first input port for connection to a first digital carrier link to a digital network;

a first output port for connection to a second digital carrier link to digital terminal equipment;

a first signal transmission path between the first input and output ports comprising a first signal regenerator;

a second input port for connection to the second digital carrier link to digital terminal equipment;

a second input port for connection to the first digital carrier link to a digital network;

a second output port for connection to the first digital carrier link to a digital network;

a second signal transmission path between the second input and output ports comprising a second signal regenerator;

a first monitor jack for non-intrusively providing a monitor connection with the first signal transmission path;

a second monitor jack for non-intrusively providing a monitor connection with the second signal transmission path; and

a controller coupled with first and second selectably-activated loopback circuits configured to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously.

37. The repeater of claim 36, further comprising:

a multi-position switch which activates the first signal regenerator when in a first position and de-activates the first signal regenerator when in a second position.

38. The repeater of claim 37, further comprising:

a first frame format detector configured to determine a first format of a first signal on the first signal transmission path;

a second frame format detector configured to determine a second format of a second signal on the second transmission path;

a first visual indicator which provides one of a first plurality of indications based on the first format; and

a second visual indicator which provides one of a second plurality of indications based on the second format.

39. The repeater of claim 38 wherein the first and second formats of the first and second signals, respectively, are one of unframed SF/D4, and T1-ESF.

40. The repeater of claim 36, wherein the physical dimensions of the repeater conform to a Network Communication Terminal Equipment (NCTE) Standard 200-type or 400-type circuit card for a standard wall-mountable telecommunications shelf.

42. The repeater of claim 40 wherein the circuit card includes a 56 pin pin-out.

43. A repeater for interfacing between a digital service network and a local network span comprising:

a first input port for connection to a first digital carrier link to a digital network;

a first output port for connection to a second digital carrier link to a digital terminal equipment;

a first signal transmission path between the first input and output ports;

a second input port for connection to the second digital carrier link to digital terminal equipment;

a second output port for connection to the first digital carrier link to a digital network;

a second signal transmission path between the second input and output ports;

a first monitor jack for non-intrusively providing a monitor connection with the first signal transmission path;

a second monitor jack for non-intrusively providing a monitor connection with the second signal transmission path;

a first frame format detector configured to determine a first format of a first signal on the first signal transmission path;

a second frame format detector configured to determine a second format of a second signal on the second transmission path;

a first visual indicator which provides one of a first plurality of indications based on the first format;

a second visual indicator which provides one of a second plurality of indications based on the second format; and

a controller coupled with first and second selectably-activated loopback circuits configured to selectively activate the first and second selectably-activated loopback circuits individually and simultaneously.

44. The repeater of claim 43, wherein the physical dimensions of the repeater conform to a Network Communication Terminal Equipment (NCTE) Standard 200-type or 400-type circuit card for a standard wall-mountable telecommunications shelf.

46. The repeater of claim 44 wherein the circuit card includes a 56 pin pin-out.

IX. EVIDENCE APPENDIX

(Not applicable.)

Application No.: 09/630,413 Docket No.: 00-VE12.24

X. RELATED PROCEEDINGS APPENDIX

(Not applicable.)